

## Stefan Schwietzke, Ph.D.

CIRES / NOAA ESRL Global Monitoring Division, 325 Broadway R/GMD1, Boulder CO 80305-3328

[stefan.schwietzke@noaa.gov](mailto:stefan.schwietzke@noaa.gov) | +1.303.497.5073 (office)

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### EDUCATION

Ph.D.	2013	Engineering and Public Policy	Carnegie Mellon University
Dipl.-Ing. (M.S. equiv.)	2008	Technology Management	Universität Stuttgart, Germany
Vordiplom (B.S. equiv.)	2004	Mechanical Engineering	Universität Stuttgart, Germany

### PROFESSIONAL EXPERIENCE

- 05/2015 – present **Research Scientist II** (Research Scientist I until 03/2017), *University of Colorado Boulder*, Cooperative Institute for Research in Environmental Sciences (CIRES)
- Led or contributed to atmospheric modeling during field work deployments in oil and natural gas producing regions across North America.
  - Collaborated with oil and gas industry management, operational teams, and environmental regulators to interpret data, identify potential sources for emission reductions, and compare modeled and industry reported emissions.
- 05/2014 – 04/2015 **Postdoctoral Research Associate**, *National Oceanic and Atmospheric Administration (NOAA)*, Earth System Research Laboratory, Global Monitoring Division
- Led an international team of atmospheric chemists, geologists, and data scientists to revise global inventories of energy-related methane emissions up by 20-60%, revealing greater potential to recover produced natural gas for sales.
  - Identified research funding opportunities, drafted funding proposals, and was awarded two research grants.
  - Supervised undergraduate student researcher for creating a database of field measurements.
- 08/2009 – 12/2013 **Research Assistant**, *Carnegie Mellon University*, Center for Climate and Energy Decision Making
- Compared emission inventory-based greenhouse gas estimates of renewable and fossil energy systems using climate modeling and atmospheric measurements.
  - Project manager for a semester long research project involving 22 undergraduate and graduate students.
  - Coursework includes decision and risk analysis (e.g., benefit-cost analysis) and climate change economics.
- 02/2009 – 06/2009 **Intern**, *PricewaterhouseCoopers*, Automotive Strategy Consulting (Germany)
- Analyzed how shifts in national carbon dioxide emission targets, vehicle technologies, car markets, and the global economic crisis in 2008 questioned traditional business models in the automotive industry.
- 08/2007 – 12/2008 **Research Assistant**, *Purdue University*, Laboratory of Renewable Resources Engineering
- Assistant to project director for a [study](#) of the International Energy Agency (IEA) highlighting research gaps of 2<sup>nd</sup> generation transportation biofuels.
  - Carbon dioxide emission analysis of 2nd generation transportation biofuels.

- 01/2006 **Assistant to a Member of Parliament, State Parliament of Baden-Württemberg (Germany)**
- Gained insights in the internal mechanisms of the state legislative process.
- 05/2005 – 09/2005 **Intern, Porsche AG, Quality Management (Germany)**
- Implemented (planned, executed) an SAP-Software package for the corporate quality management process.
  - Trained senior managers in using the tool.
  - Performed vehicle prototype audits, determined warranty costs, prepared management presentations.
- 08/2002 – 09/2002 **Intern, DaimlerChrysler AG (now Daimler AG), Research and Development (Germany)**
- Operated industrial manufacturing machines and produced model parts for use in corporate research and development.

## PUBLICATIONS

- Vaughn, T., Bell, C., Yacovitch, T., Roscioli, J., Herndon, S., Conley, S., **Schwietzke, S.**, Heath, G., Pétron, G., Zimmerle, D. (2017) Comparing facility-level methane emission rate estimates at natural gas gathering and boosting stations. In review.
- Schwietzke, S.**, Petron, G., Conley, S., Pickering, C., Mielke-Maday, I., Dlugokencky, E., Tans, P., *et al.* (2017) Improved mechanistic understanding of natural gas methane emissions from spatially-resolved aircraft measurements. *Environ. Sci. Technol.* (in press).
- Sherwood, O., **Schwietzke, S.**, Arling, V., Etiope, G. (2017) Global inventory of gas geochemistry data from fossil fuel, microbial and biomass burning sources, Version 2017. *Earth Syst. Sci. Data Discuss.*, doi:10.5194/essd-2017-20, in review. [Full text](#).
- Conley, S., Faloona, I., Mehrotra, S., Suard, M., Lenschow, D., Sweeney, D., Herndon, S., **Schwietzke, S.**, Pétron, G., Pifer, J., Kort, E., Schnell, R. (2017) Application of Gauss's Theorem to quantify localized surface emissions from airborne measurements of wind and trace gases. *Atmos. Meas. Tech. Discuss.*, doi:10.5194/amt-2017-55, in review. [Full text](#).
- Smith, M., Kort, E., Gvakharia, A., Sweeney, C., Conley, S., Faloona, I., Newberger, T., Schnell, R., **Schwietzke, S.**, Wolter, S. (2017) Airborne quantification of methane emissions over the Four Corners region. *Environ. Sci. Technol.* DOI: 10.1021/acs.est.6b06107. [Full text](#).
- Barkley, Z., Lauvaux, T., Davis, K., Deng, A., Cao, Y., Sweeney, C., Martins, D., Miles, N., Richardson, S., Murphy, T., Cervone, G., Karion, A., **Schwietzke, S.**, Smith, M., Kort, E., Maasakkers, J. (2017) Quantifying methane emissions from natural gas production in northeastern Pennsylvania. *Atmos. Chem. Phys. Discuss.*, doi:10.5194/acp-2017-200. DOI: 10.5194/acp-2017-200. [Full text](#).
- Bruhwyler, L., Basu, S., Bergamaschi, P., Bousquet, P., Dlugokencky, E., Houweling, S., Ishizawa, M., Kim, H., Locatelli, R., Maksyutov, S., Montzka, S., Pandey, S., Patra, P., Pétron, G., Saunio, M., Sweeney, C., **Schwietzke, S.**, *et al.* (2017) U.S. CH<sub>4</sub> emissions from oil and gas production: have recent large increases been detected? *J Geophys Res Atmos.* DOI: 10.1002/2016JD026157. [Full text](#).
- Schwietzke, S.**, Sherwood, O., Bruhwiler L., Miller, J., Etiope, G., Dlugokencky E., *et al.* (2016) Upward revision of global fossil fuel methane emissions based on isotopic database. *Nature* 538, 88-91. [Full text](#).
- Schwietzke, S.**, Griffin, M., Matthews, S., Bruhwiler, L. (2014) Global natural gas fugitive emissions rates constrained by atmospheric methane and ethane. *Environ. Sci. Technol.* 48 (14), 7714–7722. [Full text](#).

- Schwietzke, S.**, Griffin, M., Matthews, S., Bruhwiler, L. (2014) Global bottom-up fossil fuel methane and ethane emissions inventory for atmospheric modeling. *ACS Sustain. Chem. Eng.* 2, 1992–2001. [Full text](#).
- Schwietzke, S.** (2013) Atmospheric impacts of biofuel and natural gas life cycle greenhouse gas emissions and policy implications. Ph.D. dissertation, Carnegie Mellon University, Department of Engineering and Public Policy. [Full text](#).
- Schwietzke, S.**, Griffin, M., Matthews, S. (2011) Relevance of emissions timing in biofuel greenhouse gases and climate impacts. *Environ. Sci. Technol.* 45 (19), 8197–8203. [Full text](#).
- Schwietzke, S.**, Kim, Y., Ximenes, E. Mosier, N., Ladisch, M. (2009) Ethanol Production from Maize, p. 347-364, Chapter 23, *Biotechnology in Agriculture and Forestry*, Vol. 63, Springer, Berlin. [Full text](#).
- Schwietzke, S.**, Ladisch, M., Russo, L., Kwant, K., Mäkinen, T. Kavalov, B., *et al.* (2008) Gaps in the Research of 2<sup>nd</sup> Generation Transportation Biofuels, *International Energy Agency*, Bioenergy: T41(2): 2008:01. [Full text](#).
- Schwietzke, S.** (2008) Impact of corn stover removal for bioenergy on soil organic carbon. Thesis, University of Stuttgart, Institute for Energy Economics and Rational use of Energy. [Full text](#).

#### SELECT INVITED PRESENTATIONS

- “Basin-scale aircraft measurements of oil and gas methane emissions”. *National Academies of Sciences*, Workshop on Anthropogenic Methane Emissions in the U.S. Boulder, CO, March 2017.
- “Global fossil fuel methane emissions: Top-down science, recent findings, research needs.” *Stanford University*, Natural Gas Initiative Workshop, Stanford, CA, November 2016.
- “Methane emissions from oil and gas development – field measurements in the U.S. and abroad.” *Colorado-Wyoming Academy of Science*. Denver, CO, November 2015.

#### GRANTS, AWARDS, HONORS

- 04/2017 – 03/2020 **NASA**, Interdisciplinary Research in Earth Science grant: “Process-level investigation of revised global methane budget based on in situ and remote sensing of atmospheric composition and the land surface”, \$1,282,000 (PI)
- 05/2015 – 04/2016 **CIRES**, Innovative Research Proposal grant: “Global Inventory of Natural Gas Isotopic and Chemical Composition for Improved Atmospheric Methane Budgeting”, \$22,000 (Co-PI)
- 06/2014 **American Chemical Society**, Editor’s Choice Award for publication “Global bottom-up fossil fuel fugitive methane and ethane emissions inventory for atmospheric modeling”
- 05/2014 – 04/2015 **National Academies of Sciences**, National Research Council, Postdoctoral Research Associate Fellowship.
- 04/2012 – 03/2013 **ERM Foundation North-America**, Sustainability Fellowship.
- 02/2011 **Carnegie Mellon University** (Dept. of Engineering and Public Policy), Herbert L. Toor Award for outstanding research paper submitted in the Ph.D. qualifying exam.
- 10/2004 – 04/2005 **Baden-Württemberg State Foundation** (Germany), Study-abroad Fellowship.

## OTHER PROFESSIONAL ACTIVITIES, EDUCATION, and VOLUNTEERING

- 05/2017                      Session chair, Global Monitoring Annual Conference in Boulder, CO.
- 10/2016 – present      Journal guest editor, *Elementa Science of the Anthropocene*, Oil and Natural Gas Special Forum
- 09/2016                      Session co-chair, 14<sup>th</sup> International Global Atmospheric Chemistry (IGAC) Conference in Breckenridge, CO.
- 12/2012                      Science communication competition regional finalist, NASA FameLab
- 03/2012 – 04/2014      Youth soccer coach (ages 10-12 years), Pittsburgh Dynamo
- 02/2011 – present      Peer-reviewer for scientific journals:
- *Environmental Science and Technology*
  - *Global Biogeochemical Cycles*
  - *Waste Management*
- 07/2010                      Environmental law coursework: "Natural Resource and Damage Assessment and Restoration", Vermont Law School
- 10/2004 – 04/2005      Study-abroad (Economics, French), Université de La Réunion, France (DOM)
- 07/2001 – 03/2002      Military service, 5./Paratrooper Bataillon 373, Doberlug-Kirchhain, Germany.